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Graduates In The IT And Management Study Programme: 20-Year Period Of Development

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Abstract

Political and economic conditions having been taken into account, the system and process of education have substantially changed within the last 20 years. The 20-year period is rather long to be evaluated, the strengths defined, weaknesses discovered and opportunities and threats considered. Above all, modern technologies penetrated the whole society and have become standard on the higher education level. These were the main reasons why in 2013 the graduates were addressed to complete the questionnaire focusing on evaluation of their higher studies at FIM and the reflection to the "world of work". More than 5,000 students have graduated from the faculty within the 20-year period; approximately 900 of them have registered on the Alumni Portal. These graduates were addressed to fulfil the questionnaire which was presented on the university web page for three months. The questionnaire contained 85 items structured in 10 fields. The method of frequency analysis was applied and data were processed by the NCSS2007 statistic software. Results were presented in diagrams and interpreted in a wider context.

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1. Introduction

Despite the Faculty of Informatics and Management (FIM), University of Hradec Kralove (UHK), Czech Republic, has had a short history of 20 years been established in 1993, this institution has accredited eight study programs (Applied Informatics - AI ; Information Management - IM, General Informatics - GI, Information and Knowledge Management - IKM, Tourism & Management - TM, Financial Management - FM, Sports management - SM, Health Management - HM) in the bachelor, master or doctoral degrees, in the present (full-time) and/or combine (part-time) form of study. Relating to the main field of study, the faculty has become the leader in the process of the ICT implementation in university education in the Czech Republic. More than 220 online courses have been designed by faculty staff and used in the present and combined forms of study, or for life-long education

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in the distance form. Starting with 200 students in 1993, this academic year more than 2,400 students have been enrolled in the faculty (Frydrychová Klímová & Poulová, 2012)

The 20-year history is the period long enough to be evaluated, strengths defined, weaknesses discovered and opportunities and threats considered. That was the reason why in 2013 the graduates were addressed to complete the questionnaire described below.

1. Research design and methodology

In this paper partial data from the questionnaire are presented. Below, the research sample is described and analyzed from the point of fields of study, respondents´ period of study, evaluation of teaching methods and strategies, students´ work experience and the process of searching for a job.

1.1. Research method

The method of questionnaire was applied in this research to monitor graduates' opinions and experience (Chráska, 2007). The questionnaire was structured in ten parts focusing in detail on evaluation of study, competences developed within the study and required by employers and their success on the labor market, all of them considered from the point of graduates´ satisfaction with the quality of the program they had studied. Totally the questionnaire contained 85 items; 27 items of multiple-choice type, 27 items of short open answers, four long open answers (of paragraph type), 10 items of Yes/No answers, 15 items of scale type, or combinations. It was presented on the university web page for three months since April 2013.

1.2. Research sample

Since 1993 more than 5,000 students have graduated from the Faculty of Informatics and Management; approximately 900 of them have registered on the Alumni Portal. These graduates were addressed to fulfil the questionnaire. It was presented on the university web page for three months. Finally, 282 graduates participated in the research, i.e. the return rate was 32 %, i.e. 6 % from the total amount of all graduates. From the above mentioned eight study programs, graduates of five of them participated in the research (AI - 15 %; IM - 49 %; TM - 22 %; FM - 11 %; SM - 4 %). Other descriptive characteristics include:

- *gender*: 56 % of men (44 % of women) participated in the research;
- *age*: most respondents were born in the period of 1981-85 (51 %), 1976-80 (18 %), 1986-90 (19 %) etc.;
- *period of study*: most respondents enrolled in 2003 (above 40 %), more of them graduated in 2009 (nearly 50 %);
- *degree*: 47 % of respondents studied a bachelor study program, 52 % master and 1 % doctoral degree;
- *form of study*: 78 % of respondents were full-time students, 22 % were the part-time students;
- *experience abroad*: totally 37 % of respondents spent a period abroad, either working (13 %), or studying (24 %); minimum length of stay was 1 month, maximum 150 months, mean 11 months, median 6 months;
- *work experience*: this item was considered from two views: professional work, i.e. in the field relating to the field of study, and period of work, i.e. whether the experience was received before or within the period of study at the faculty; even more graduates had some work experience relating to the studied program before they enrolled (69 %) and at the time of enrolling at the faculty (35 %); within the whole course of study 70 % of respondents had work experience in the studied field (figure 1);
- *work after graduation*: most of respondents (83 %) started work in private commercial sector, i.e. in private companies, 11 % of graduates worked in public sector, i.e. in public service, education etc., only few of them found jobs in the non-profit organizations, e.g. in the health care sector, and 5 % of graduates started their careers in other fields.

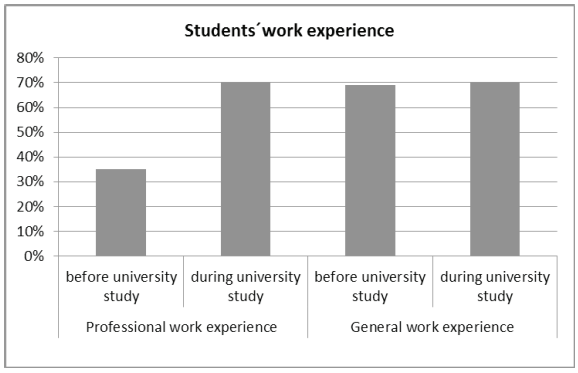

Fig. 1. Respondents´ work experience

These data prove the study program is closely bound with the reality and enables students to receive work experience during period of the university study.

2. Research results

The data are presented which describe the IT and Management study program from the "university – industry" point of view, i.e. graduates´ partial evaluation of the process of instruction is presented and assessment of graduates´ competences is provided, both based on their own opinions compared to the employers´ experience and evaluation. The data were summarized and processed by the method of frequency analysis.

2.1. Process of instruction

Relating to the process of instruction the methods and approaches applied within the teaching and learning were evaluated by the respondents. Following 10 methods and approaches were considered: (1) Lecturing, (2) Team work, (3) Participation in research projects, (4) Development and training practical skills, (5) Forming theoretical knowledge, (6) Teacher as the main source of information, (7) Learning by project solving, (8) Preparing own study texts, (8) Designing and training of oral presentations, (10) Applying written tests for testing knowledge. Respondents ticked those which were applied during their university study: to a large extent (black color in Fig.2), or rarely (light grey color).

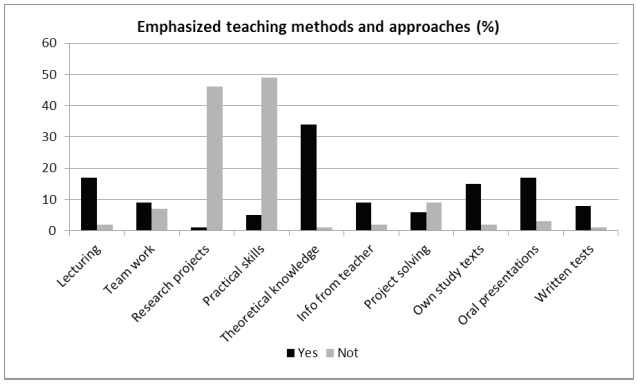

Fig. 2. Emphasized teaching methods and approaches

The data show the most frequently applied approach was providing theoretical knowledge (34 %) by methods of lecturing (17 %), students´ oral presentations (17 %) and preparing their own study texts and materials (15 %). Nearly half of respondents said that less frequently applied approaches were developing practical skills (49 %) and participation in research projects (46 %). Despite these methods are not considered modern, but "traditional" ones,

currently they are not recognize to reflect students´ needs and professional requirements. If we consider this result to evaluation of graduates´ knowledge, we would expect strong differences in graduates´ answers. In other words, if "traditional", i.e. not modern, e.g. ICT-supported methods are used, knowledge and skills required from graduates by today´s employers cannot be sufficiently developed. But the results proved the "insufficiency" was not frequently detected from the employers´ points of view (Šimonová et al., 2009) Generally summarized, it always depends on teacher´s competence whether the methods and approaches activate learners, or not (e.g. by using ICT, providing examples of good practice etc.), or whether they are applied in a rigorous and passive way. On the other hand, unfortunately learners´ participation in research projects and learning by project solving and developing and training practical skills still have not become frequently applied methods in the Czech university education.

Thus the results presented in figure 2 clearly show what the main weaknesses in the methodology of the process of instruction are.

2.2. Searching for a job

The process of searching for a job was considered from two points of view:

- ways to searching for a job, i.e. what sources the respondents used when looking for vacant positions reflecting their (future) professional competences and degree;
- time to searching for a job, i.e. when the respondents started the process of searching for a job.

As expected and clearly seen in figure 4, the Internet has been the most frequently used source of information, despite the data were collected from graduates of 20-year period. Those who actively contacted the employers were approximately of 17 % followed by family contacts and friends´ support (16 %). Nearly 9 % of respondents were offered jobs by employers, but personal agencies, labor office or advertisements were not much helpful (figure 3a).

From the point of time management, most respondents started to search for a job before graduation (37 %), approximately same number decided to do so closely at the time of graduation and after it (22 %, 26 %) and 13 % of respondents were offered a job (which is 5 % more than in figure 3b).

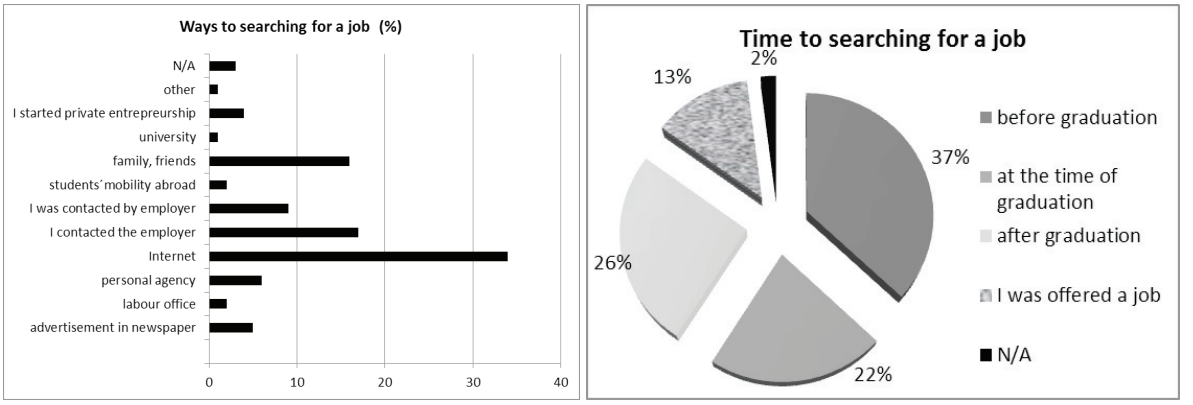

Fig. 3. (a) Ways to searching for a job; (b) Time to searching for a job.

2.3. Evaluation of graduates´ competences

Employers´ evaluation of graduates' competences and graduates' evaluation of their own competences belong to crucial criteria of both the employers and employees. Below, graduates' competences developed within the study at FIM are evaluated by themselves being compared to employers´ evaluation and expectations .Totally 19 criteria were considered on the 7-level competence scale (7 – the highest level of competence; 1 - the lowest level). Graduates gave the highest appreciation to their PC and internet skills (73 %), ability to acquire new knowledge

quickly (45 %), applying analytic thinking (34 %), willingness to re-think ideas of their own and others (32 %) and ability to co-ordinate activities (29 %). Employers also appreciated graduates´ PC and internet skills but their evaluation was not so high (52 %), ability to acquire new knowledge and master the field they studied (41 % each), to work in team (39 %) and exploit time efficiently (38 %). Further on, the data were compared and analysed from three levels (the highest, middle, lowest level). Within the highest level, the employers´ evaluation of graduates´ competences was lower in five criteria (analytic thinking, acquiring new knowledge, PC and internet competence, re-thinking of own and others´ ideas, preparing written documents; in bringing new ideas the evaluations were equal), which means that graduates´ competences in these fields were higher than employers' expected. On the other hand, graduates expressed lower level of their competences than employers detected in other five criteria ("having a nose" for new opportunities, mobilize work capacities of co-workers, assert themselves, present products, ideas, news to public, oral and written foreign language skills). Within the middle level of competence, knowledge of other fields was detected by 93 % of respondents, followed by "having a nose" for new opportunities (89 %), assert themselves (88 %), clearly explain own attitudes to others and negotiate efficiently (83 % each). Employers also considered graduates´ competence at the middle level in having knowledge of other fields (87 %), willingness to re-think own and others' ideas (79 %), ability to mobilize work capacities of others (77 %), "have a nose" for new opportunities and assert themselves (74 %). The lowest level of competence, i.e. what should be improved, was not frequently detected by the respondents. It covered oral and written foreign language skills (4.6 %), "having a nose" for new opportunities (2.1 %), present products, ideas, news to public, assert themselves and mobilize work capacities of others (1.7 % each). Employers' evaluation covers identical activities in different order as follows: oral and written foreign language skills (10.6 %), present products, ideas, news to public (8.5 %), "having a nose" for new opportunities (8.1 %), mobilize work capacities of others (5.7 %) and assert themselves (3.5 %).

3. Discussions and conclusions

Despite the above described data may not be clear enough to show evaluation from two points of view, the differences are more visible in figure 6 and require a more detailed focus. Resulting from the presented data, two conclusions can be made: (1) graduates´ and employers' evaluation do not differ significantly, which supports the ethical correctness from the respondents' side; (2) graduates´ competences formed and developed within their study meet employers' requirements in a large extent as only a very small deal of competences was considered at the low level or missing. This state entitles us to conclude that the quality of learning content and didactic means applied within the process of instruction of the IT and Management study programme at the Faculty of Informatics and Management reflects and meets the needs of labour market. The evaluation reflects a rather long period of 20 years, the total results might be influenced by those from the starting period 15-20 years ago while teaching methods, forms and approaches were changed e.g. by role of ICT (Černá & Poulová, 2012). FIM is a young institution providing education in currently highly required fields of information technologies and management. After the 20-year-long period it has become stable from the point of study programmes, hardware and software equipment, academic staff who provided opportunities to increase and develop their professional competences, and last but not least having a clear target, i.e. to prepare professionals whose competences will meet the requirements of the all-time changing labour market. The "traditional" educational activities are being supported by Erasmus and other types of motilities for both the learners and teachers, co-operation with real companies etc. which provides conditions to reaching the target of graduates´ success in a highly competitive environment. The results of questionnaire survey entitle us to conclude that the quality of learning content and didactic means (i.e. teaching methods and approaches) applied within the process of instruction in the IT and Management study programme at the Faculty of Informatics and Management reflect and meet the needs of the current labour market.

Within the last two decades the Czech educational system has undergone changes relating to the social development. New teachers´ and learners´ competences have been defined and reflected in the learning content, adequate teaching methods and organizational forms, ways of evaluation and new relations between elements participating in the educational process have been set, curricula have been changed, as well as learner´s responsibility for his/her own education, creativeness and motivation have been supported, and last but not least economic aspects penetrated the whole system. The "traditional" approach to education requires attending lectures and classes, completing assignments and other activities in order to successfully pass the subject or course.

Electronic education (i.e. ICT-supported teaching and learning, e-learning) is bringing a new quality to the educational process and fast technical and technological development resulted in the necessity of ICT implementation into educational process. These features have been slowly but steadily included into the new educational system. In spite of having lots of both supporters and opponents, the information and communication technologies have become standard and an inseparable part of the educational process, and current approach to instruction is hardly to be imagined without them.

Taking into account all pros and cons, several didactic-related questions inevitably arose, e.g. (Poulová, Šabatová.& Šimonová, 2010).

- Are teachers able to apply suitable methods and forms of instruction, create and use appropriate didactic means which are offered by new technologies?
- Do students have higher level of knowledge if they attend lessons supported or completely managed by ICT, or run traditionally by teachers?
- Are the new didactic means (methods and forms supported by digital technologies) able to optimize the cognitive process of creating knowledge?

And what are the results?

Much effort will be required from teachers, learners, institutions, society and others so that we could provide positive answers to these questions. But reflecting all current conditions and requirements, the main objective of current educational system(s) is to focus on these problems and solve them. Only this result can be considered the teachers´ contribution to the development of todays´ society.

"How long will we be preparing today´s children in yesterday´s schools by day-before-yesterday´s methods for tomorrow´s problems?" (Rýdl, 2010)

Acknowledgements

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References

Černá, M. & Poulová, P. (2012). Social Software Applications and their Role in the Process of Education from the Perspective of University Students. In *Proceedings of the 11th European Conference on e-Learning (ECEL 2012*). Reading:Academic publishing, 87-96.

Chráska, M. (2007). *Metody pedagogického výzkumu*. Praha: Grada Publishing.

Frydrychová Klímová, B. & Poulová, P. (2012). Reflection on the development of eLearning in the Czech Republic.In *Proceedings of the 16th WSEAS International Conference on Recent Researches in Communications and Computer*s. Athens : World scientific and engineering academy and society, 433-437.

Poulová, P., Šabatová, M.& Šimonová, I. (2010). ICT contribution to the process of e-learning implementation in the field of education. In *Advanced Educational Technologies - 6th WSEAS/IASME International Conference on Educational Technology*. Athens : World scientific and engineering academy and society, 157-161.

Rýdl, K. (2010). *Education 21*. Retrieved from www.vzdelani21.cz/download/2982-infokit-vzdelani21-final.pdf.

Šimonová, I., Poulová, P., Šabatová, M. et al. (2009). *On contribution of modern technologies towards developing key competences*. Hradec Králové: MILOŠ VOGNAR Publishing House.